WHAT IS CLAIMED IS:

1. A method comprising:

a) obtaining at least a first nuclease inhibitor;

b) obtaining at least a second nuclease inhibitor;

c) obtaining a composition; and

d) admixing the first nuclease inhibitor, the second nuclease inhibitor and the composition to form an admixture;

wherein nucleases that may be present in the admixture are inhibited.

2. The method of claim 1, wherein admixing is further defined as comprising mixing the first and second nuclease inhibitors to form a nuclease inhibitor cocktail and mixing the nuclease inhibitor cocktail with the composition.

3. The method of claim 1, wherein the admixture comprises at least one nuclease.

4. The method of claim 1, wherein the composition comprises a nucleic acid.

5. The method of claim 1, wherein the composition is further defined as a cell lysis buffer, a tissue lysis buffer, an RNA extraction solution, an *in vitro* translation reaction mixture, a transcription reaction mixture, a reverse transcription reaction mixture or a coupled transcription/translation reaction mixture.

6. The method of claim 1, wherein the composition is a reagent used in molecular biology.

7. The method of claim 1, wherein the first and second nuclease inhibitors comprise, independently, a small molecule, an oligonucleotide, a proteinaceous compound, or an affinity resin.

8. The method of claim 7, wherein the small molecule comprises an organic compound, an inorganic compound, a salt, or a chaotrope.

9. The method of claim 8, wherein the small molecule comprises an organic compound.

10. The method of claim 9, wherein the organic compound is a hydrophilic or hydrophobic molecule.

11. The method of claim 9, wherein the organic compound is oligovinylsulfonic acid (OVA), aurintricarboxylic acid (ATA), aflatoxin, 2-nitro-5-thiocyanobenzoic acid, iodoacetate, N-bromosuccinimide, p-chloromercuribenzoate, diethyl pyrocarbonate, ethanol, formamide, guanidinium thiocyanate (GdnSCN), dinitrofluorobenzene, decanavanate, polyvinylsufonic acid, hydrobenzoinphosphate, phenylphosphate, putrescine, haloacetate, dinitrofluorobenzene, phenylglyoxal, bromopyruvic, hydroxylamine-oxygen-cupric ion, a vanadyl complex, 8-amino-5-(4'-hydroxy-biphenyl-4-ylazo)-naphthalene-2-sulfonate, 6-hydroxy-5-(2-hydroxy-3,5-dinitro-phenylazo)-naphthalene-2-sulfonate, 3,3'-dimethylbiphenyl-4,4'-bis(2-amino-naphthylazo-6-sulfonate), 4,4'-dicarboxy-3,3'-bis(naphthylamido)-diphenylmethanone, 3,3'-dicarboxy-4,4'-bis(4-biphenylamido) diphenylmethane, or 3,3'-dicarboxy-4,4'-bis(3-nitrophenylamido)diphenylmethane.

12. The method of claim 9, wherein the organic compound is further defined as a nitrogenous base, a chelator, a reductant, or a detergent.

13. The method of claim 12, wherein the organic compound comprises a nitrogenous base.

14. The method of claim 13, wherein the nitrogenous base is purine, pyrimidine, cytidine-N3-oxide 2'-phosphate, 2'CMP, ppAp, Ap3A, Ap4A, Ap5A, ATP, 5'AMP, 5'ADP, 3'UMP, 2'UMP, 2'CMP, pAp (5'P-A-3'P), dUppAp, dUppA2'p, pdUppAp, pTp,

pTppAp, TpdA, TppdA, 4-thiouridine 3'p, 5-nitro-uracil, 5-aminoethyl-uracil or (Bromoacetamido)nucleoside.

15. The method of claim 12, wherein the organic compound comprises a chelator.

16. The method of claim 15, wherein the chelator is EDTA, EGTA, BAPTA, Citrate, NTP, dNTP, a citrate ion, or a nucleotide.

17. The method of claim 12, wherein the organic compound comprises a reductant.

18. The method of claim 17, wherein the reductant is TCEP, cysteine, DTT, 2-ME, (+/-)-trans-1,2-bis(2-mercaptoacetamido)cyclohexane (BMC), or Cys-Glu-Cys tripeptide.

19. The method of claim 12, wherein the organic compound comprises a detergent.

20. The method of claim 19, wherein the detergent is SDS, N-laurylsarcosine, deoxycholate, NP 40, Tween 20, or Triton X-100.

21. The method of claim 8, wherein the small molecule comprises an inorganic compound.

22. The method of claim 21, wherein the inorganic compound is a metallic ion or a complex comprising Mg^{+2}, Mn^{+2}, Zn^{+2}, Fe^{+2}, Ca^{+2}, or Cu^{+2}.

23. The method of claim 8, wherein the small molecule comprises a salt.

24. The method of claim 23, wherein the salt is a monovalent or multivalent salt.

25. The method of claim 23, wherein the salt is NaCitrate, NaCl, $(NH4)_2SO_4$, or KCl.

26. The method of claim 8, wherein the small molecule comprises a chaotrope.

27. The method of claim 26, wherein the chaotrope is SCN^-, Li^+, ClO_4^-, or guanidinium.

28. The method of claim 7, wherein the oligonucleotide is an RNA or DNA oligonucleotide.

29. The method of claim 7, wherein the oligonucleotide is an aptamer, a competitive inhibitor comprising a ribonucleoside, a deoxyribonucleoside, a dideoxyribonucleoside, a thiol-containing RNA, or a DNP-poly(A).

30. The method of claim 7, wherein the proteinaceous compound comprises a peptide, a polypeptide, or a protein.

31. The method of claim 7, wherein the proteinaceous compound is an RNase inhibitor protein, a protease, a tyrosine-glutamate copolymer, or RraA.

32. The method of claim 31, wherein the proteinaceous compound is an RNase inhibitor protein obtained from a human, a chimpanzee, a rat, a mouse, a pig, yeast, or by recombinant means, or derivatives therein.

33. The method of claim 31, wherein the proteinaceous compound is a protease and wherein the protease is proteinase K, subtilisin, an alkaline proteases, an acid protease, or a pancreatic proteases.

34. The method of claim 7, wherein the affinity resin is sulfopropyl sepharose or SP sulfopropyl cation exchange resin.

35. The method of claim 7, wherein the proteinaceous compound is an antibody.

36. The method of claim 35, wherein the antibody is a soluble anti-nuclease antibody.

37. The method of claim 35, wherein the antibody is an anti-RNase antibody.

38. The method of claim 37, wherein the anti-RNase antibody is an anti-RNase T1 antibody or an anti-RNase 1 antibody.

39. The method of claim 1, wherein the first nuclease inhibitor comprises an anti-nuclease antibody and the second nuclease inhibitor comprises an RNase inhibitor protein.

40. The method of claim 39, wherein the anti-nuclease antibody is an anti-RNase T1 antibody or an anti-RNase 1 antibody.

41. The method of claim 39, wherein the RNase inhibitor protein is obtained from a human, a chimpanzee, a rat, a mouse, a pig, yeast, or by recombinant means, or derivatives therein.

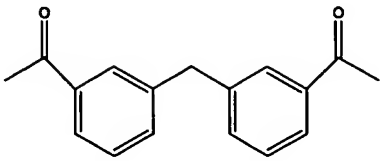
42. The method of claim 1, wherein the first nuclease inhibitor comprises an RNase inhibitor protein and the second nuclease inhibitor comprises a small molecule.

43. The method of claim 42, wherein the RNase inhibitor protein is obtained from a human, a chimpanzee, a rat, a mouse, a pig, yeast, or by recombinant means, or derivatives therein.

44. The method of claim 42, wherein the small molecule is an organic compound, an inorganic compound, or a salt.

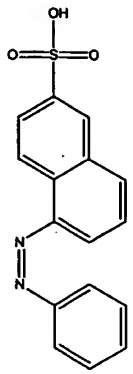
45. The method of claim 42, wherein the small molecule comprises an aromatic structure.

46. The method of claim 45, wherein the aromatic structure is:



47. The method of claim 42, wherein the small molecule comprises a polycyclic aromatic structure.

48. The method of claim 47, wherein the polycyclic aromatic structure is:



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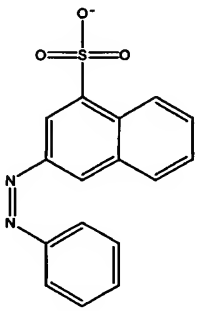
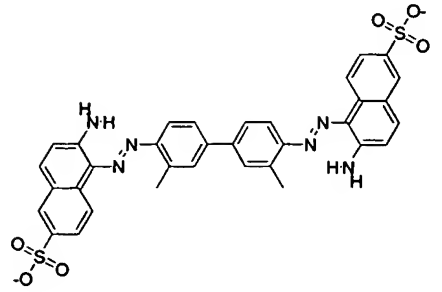


49. The method of claim 42, wherein the small molecule comprises the following structure:



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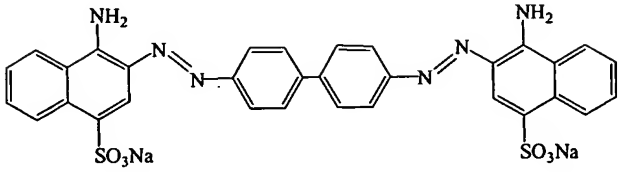

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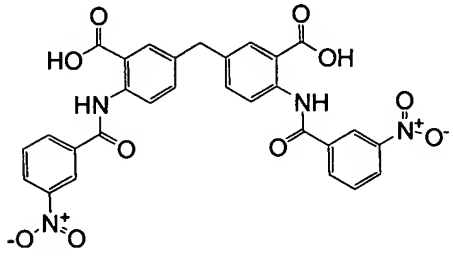


50. The method of claim 1, wherein the first nuclease inhibitor comprises an anti-nuclease antibody and the second nuclease inhibitor comprises a small molecule.

51. The method of claim 50, wherein the anti-nuclease antibody is an anti-RNase T1 antibody or an anti-RNase 1 antibody.

52. The method of claim 50, wherein the small molecule is an organic compound, an inorganic compound, or a salt.

53. The method of claim 1, wherein the first and second nuclease inhibitors comprise anti-nuclease antibodies.

54. The method of claim 53, wherein the first anti-nuclease antibody is a soluble anti-nuclease antibody.

55. The method of claim 54, wherein the first soluble anti-nuclease antibody is an anti-RNase T1 antibody or an anti-RNase 1 antibody.

56. The method of claim 1, wherein the first and second nuclease inhibitors comprise small molecules.

57. The method of claim 56, wherein the first or second small molecules comprise a structure selected from the group consisting of NCI-65828, NCI 65845, benzopurpurin B, NCI-65841, NCI 79596, NCI-9617, NCI-16224, suramin, direct red 1, NCI-7815, NCI-45618, NCI-47740, prBZBP, NCI-65568, NCI-79741, NCI-65820, NCI-65553, NCI-58047, NCI-65847, xylidene ponceau 2R, eriochrome black T, amaranth, new coccine, acid red 37, acid violet 7, NCI-45608, NCI-75661, NCI-73416, NCI-724225, orange G, NCI 47755, sunset yellow, NCI-47735, NCI-37176, violamine R, NCI-65844, direct red 13, NCI-45601, NCI 75916, NCI-65546, NCI-65855, NCI-75963, NCI-45612, NCI-8674, NCI-75778, NCI-34933, NCI-1698, NCI-7814, NCI-45550, NCI-77521, cefsulodin, NCI-174066, NCI-12455, NCI-45541, NCI-79744, NCI-42067, NCI-45571, NCI-45538, NCI-45540, NCI-9360, NCI-12857, NCI-D726712, NCI-45542, NCI-7557, S321443, NCI-224131, NCI-45557, NCI-1741, NCI-1743, NCI-227726, NCI-16163, NCI-16169, NCI-88947, NCI-17061, NCI-37169, beryllon II,, CB-0181431, CB-473872, JLJ-1, JLJ-2, JLJ-3, CB-467929, CB-534510, CB-540408, CB-180582, CB-180553, CB-186847, CB-477474, CB-152591, NCI-37136, NCI-202516, CB-039263, CB-181145, CB-181429, CB-205125, and CB-224197.

58. The method of claim 57, wherein the first or second nuclease inhibitor is NCI-65828.

59. The method of claim 58, wherein the first or second nuclease inhibitor is a derivative of NCI-65828.

60. The method of claim 59, wherein the derivative of NCI-65828 comprises at least one modification selected from the group consisting of: a reduction of the azo to hydrazido, replacement of the azo by an amide, an attachment of a hydroxyl group to position 6 of the naphthalene ring, an attachment of an electron-withdrawing group to position 6 of the naphthalene ring, replacement of a carbon atom in an aromatic ring with a nitrogen or an oxygen, and a replacement of the hydroxyl group on the biphenyl component with a sulfonate.

61. The method of claim 59, wherein the derivative of NCI-65828 comprises at least one modification selected from the group consisting of: an addition of a hydrogen-bonding group and substitution of a hydroxyl group with an anionic group to the biphenyl component.

62. The method of claim 61, wherein the hydrogen-bonding group is selected from the group consisting of a hydroxyl, an amino, and an amide.

63. The method of claim 61, wherein the anion is selected from the group consisting of a carboxylate, a sulfate, a sulfonate, a phosphate, and a phosphonate.

64. The method of claim 57, wherein the first or second nuclease inhibitor is CB-473872.

65. The method of claim 64, wherein the first or second nuclease inhibitor is a derivative of CB-473872.

66. The method of claim 65, wherein the derivative of CB-473872 comprises an addition of at least one of a hydrogen-bonding group selected from the consisting of: a hydroxyl, an amino, a methyldiamino, a hydroxyethyl, an ethyl-N-formamido, a carboxyamido, a carboxy, a 2-oxo-N-piperidinyl, and a *p*-benzoyl.

67. The method of claim 65, wherein the derivative of CB-473872 comprises Structure II or Structure III, and wherein:

R_0 is -H, $-NH_2$, or -OH;

R_3 is -H, $-CH_2OH$, or $CONH_2$;

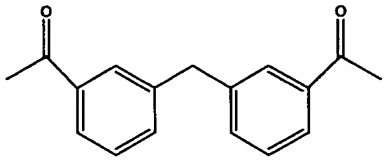
R_4 is -H, -COOH, or 2-oxo-N-piperidinyl;

R_5 is -H or *p*-benzoyl group.

68. The method of claim 65, wherein the derivative of CB-473872 comprises a replacement of a carbon atom in an aromatic ring with a nitrogen or an oxygen.

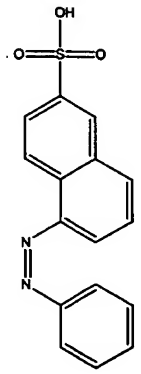
69. The method of claim 56, wherein the first or second small molecules comprises an aromatic structure.

70. The method of claim 69, wherein the aromatic structure is:



71. The method of claim 56, wherein the first or second small molecules comprises a polycyclic aromatic structure.

72. The method of claim 71, wherein the polycyclic aromatic structure is:



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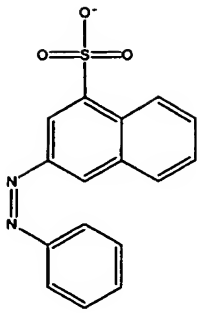
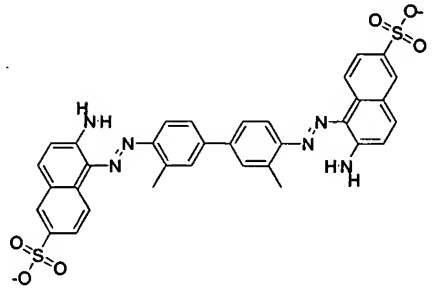


73. The method of claim 56, wherein the first or second small molecule comprises the following structure:



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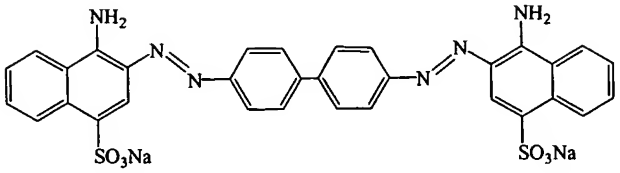

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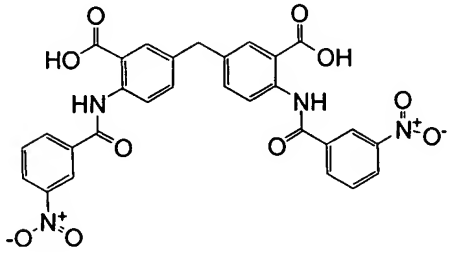

74. The method of claim 56, wherein the first nuclease inhibitor is benzopurpurin B and the second nuclease inhibitor is an organic compound, an inorganic compound, or a salt.

75. The method of claim 1, wherein the first nuclease inhibitor is benzopurpurin B and the second nuclease inhibitor is an RNase inhibitor protein, citrate, EDTA, OVA, SDS, Ap5A, proteinase K, an anti-RNase T1 Ab, or an SP resin.

76. The method of claim 1, wherein the first and second nuclease inhibitors are, independently, an RNase inhibitor protein, citrate, or EDTA.

77. The method of claim 1, wherein the first nuclease inhibitor is OVA and the second nuclease inhibitor is SDS.

78. The method of claim 1, wherein the first nuclease inhibitor is an anti-RNase antibody and the second nuclease inhibitor is an RNase inhibitor protein.

79. The method of claim 78, wherein the anti-RNase antibody is a soluble anti-RNase antibody.

80. The method of claim 78, wherein the anti-RNase antibody is an anti-RNase T1 antibody or an anti-RNase 1 antibody.

81. The method of claim 78, wherein the RNase inhibitor protein is obtained from a human, a chimpanzee, a rat, a mouse, a pig, yeast, or by recombinant means, or derivatives therein.

82. A method of performing an *in vitro* translation, transcription, reverse transcription or coupled transcription/translation reaction comprising obtaining a composition, the composition comprising a first nuclease inhibitor and a second nuclease inhibitor and

placing the composition in an *in vitro* translation reaction, transcription reaction, reverse transcription reaction or a coupled transcription/translation reaction.

83. A solution comprising at least a first nuclease inhibitor and a second nuclease inhibitor.

84. A kit comprising a first nuclease inhibitor, a second nuclease inhibitor and components for RNA isolation, an *in vitro* translation reaction, a reverse transcriptase reaction, an RNA amplification reaction, DNA removal, or *in vitro* transcription.